

Title (en)

Work loading and unloading device for bending machines.

Title (de)

Vorrichtung zur Einlagerung und Entnahme für eine Biegepresse.

Title (fr)

Dispositif pour placer et retirer des pièces dans une presse de pliage.

Publication

EP 0636435 A1 19950201 (EN)

Application

EP 94401496 A 19940630

Priority

JP 16274993 A 19930630

Abstract (en)

A work loading and unloading device (3) disposed in front of a bending machine (1) and comprising a unit composed of a 5-axis control robot (5) provided with a work hand (43) at an end thereof, as well as of a single-work taking-up device (7) for taking up only a single work (W) from stacked works. The work loading and unloading device is movable to any desired positions and provided with a work hand (43) having a double-work take-up detecting device (83) and an upper hand able to approach a bent work without interference with the punch P. <IMAGE>

IPC 1-7

B21D 43/10; B21D 5/02; B25J 5/00

IPC 8 full level

B21D 5/02 (2006.01); **B21D 43/10** (2006.01); **B25J 5/00** (2006.01); **B25J 9/06** (2006.01)

CPC (source: EP US)

B21D 5/0281 (2013.01 - EP US); **B21D 43/105** (2013.01 - EP US); **B25J 5/007** (2013.01 - EP US)

Citation (search report)

- [XY] FR 2584633 A1 19870116 - PRIMA IND SPA [IT]
- [Y] US 4150936 A 19790424 - FURUKAWA TSUNEO [JP], et al
- [Y] US 5187958 A 19930223 - PRUNOTTO GIANPAOLO [IT], et al
- [A] EP 0354559 A1 19900214 - DAIKIN IND LTD [JP]
- [A] EP 0532372 A1 19930317 - PEUGEOT [FR], et al
- [A] DE 3407445 A1 19850912 - SIEMENS AG [DE]
- [A] EP 0213667 A2 19870311 - LIET CORNELIS HENDRICUS
- [Y] PATENT ABSTRACTS OF JAPAN vol. 13, no. 60 (M - 796) 10 February 1989 (1989-02-10)
- [X] PATENT ABSTRACTS OF JAPAN vol. 15, no. 318 (M - 1146) 14 August 1991 (1991-08-14)

Cited by

EP3311963A1; WO2018073312A1; CN102896249A; CN106270081A; CN105537468A; CN102975192A; BE1016590A3; CN109890582A; EP1623773A1; AT509320A4; AT509320B1; US7309204B2; US11305415B2; US11117174B2; WO2006122379A1

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